Journal of Analytical Chemistry 2012 vol.67 N8, pages 706-713

Electrothermal atomic absorption spectrometry with two-step probe atomization and primary absorption signal feedback

Zakharov Y., Kokorina O.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

A method is proposed to reduce the relative detection limits for elements in an atomic absorption spectrometer with a graphite furnace and two-step probe atomization, based on using feedback between the absorption impulse of primary sample atomization and probe fixation in the position for vapor fractionation. Deposition of sample fractions on the probe, which interferes with measuring the analytical signal, is reduced. The relative limits of the direct detection of Pb, Cd, and Tl in NaCl and K 2SO 4 are lowered by more than one order of magnitude in comparison to the atomization of such salts under the conditions of a temperature-stabilized furnace with a platform. The detection limits are 10 -7 to 10 -8 wt %. The relative standard deviation of the analytical signals does not exceed 5%, which is appropriate for the measurement of concentration. © 2012 Pleiades Publishing, Inc.

http://dx.doi.org/10.1134/S1061934812080084

Keywords

Background absorption, Electrothermal atomic absorption spectrometry, Matrix interferences, Two-step probe atomization